

**PATENT APPLICATION**  
**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Docket No: Q77943

Junji SHIROKOSHI

Appln. No.: 10/702,082

Group Art Unit: 2861

Confirmation No.: 8230

Examiner: Shelby Lee FIDLER

Filed: November 6, 2003

For: IMAGE FORMING APPARATUS TO WHICH ATTACHMENT UNIT CAN BE  
CONNECTED

**AMENDMENT UNDER 37 C.F.R. § 1.111**

**MAIL STOP AMENDMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated April 18, 2006, please amend the above-identified application as follows on the accompanying pages.

**TABLE OF CONTENTS**

AMENDMENTS TO THE CLAIMS.....	2
REMARKS.....	7

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): An image forming apparatus, comprising:

a main section which includes a main-section connector;

a plurality of attachment units which are attached to said main section in a cascade arrangement, and each of which includes a controlled element; and

a line group which connects said main section with said plurality of attachment units, and which establishes communications between said main section and said controlled elements which are respectively disposed to said plurality of attachment units, wherein

said line group includes signal lines and selective control lines,

said signal lines connect said controlled elements in parallel with said main section, to thereby realize a communication between each one of said controlled elements and said main section, and

said selective control lines connect said main section respectively with said attachment units, to thereby select one of said attachment units to which said main section is to communicate,

said plurality of attachment units at least includes a first attachment which is attached to said main section and a second attachment unit which is attached to said first attachment unit, said first attachment unit having a first controlled element, a first upstream-side connector and a

first downstream-side connector, said second attachment unit having a second controlled element, a second upstream-side connector and a second downstream-side connector,

a contact arrangement of said main-section connector is identical to that of said first downstream-side connector and that of said second downstream-side connector,

a contact arrangement of said first upstream-side connector is identical to that of said second upstream-side connector,

the contact arrangement of said main-section connector corresponds to that of said first upstream-side connector, thereby enabling said main-section connector to connect to said first upstream-side connector and to said second upstream-side connector, and also enabling said first downstream-side connector to connect to said second upstream-side connector,

said line group is electrically connected between said first attachment unit and said main section when said first upstream-side connector is connected to said main-section connector,

said line group is electrically connected between said second attachment unit and said first attachment unit when said second upstream-side connector is connected to said first downstream-side connector,

said main-section connector includes a first lower-contact point and a second lower-contact point, the first lower-contact point being wired to said selective control line for the first controlled element, the second lower-contact point being wired to said selective control line for the second controlled element,

said first upstream side connector includes a first upper-contact point and a second upper-contact point, the first upper-contact point corresponding to the first lower-contact point and being wired to the first controlled element,

said first downstream-side connector includes a third lower-contact point,

said second upstream-side connector includes a third upper-contact point which corresponds to the third lower-contact point and which is wired to the second controlled element,  
and

internal wiring in said first attachment unit between the second upper-contact point and the third lower-contact point is shifted so that a position of the first upper-contact point in said first upstream-side connector is identical to a position of the third upper-contact point in said second upstream-side connector.

2. (currently amended): The image forming apparatus of claim 1, wherein said selective control lines are provided in accordance with a cascade connection count of said attachment units relative to said main section, the cascade connection count being the maximum number of said attachment units which can be controlled separately from said main section.

3. (currently amended): The image forming apparatus of claim 1, wherein ~~when said main section activates any one of said selective control lines, a current path is established via said signal lines between said main section and said controlled element which is disposed to said attachment unit which corresponds to thus activated selective control line~~

said second upstream-side connector further includes a fourth upper-contact point of which the position is identical to the second upper-contact point in said first upstream-side connector.

said second downstream-side connector further includes a fourth lower-contact point, and internal wiring in said second attachment unit between the fourth upper-contact point and the fourth lower-contact point is shifted so that a position of the fourth lower-contact point in said second downstream-side connector is identical to a position of the third lower-contact point in said first downstream-side connector.

4-7. (canceled).

8. (original): The image forming apparatus of claim 1, wherein said plurality of attachment units have the same function with each other.

9. (original): The image forming apparatus of claim 8, wherein said plurality of attachment units have the same structure with each other.

10. (currently amended): The image forming apparatus of ~~claim 4~~claim 1, wherein each one of said attachment units comprises a printed circuit board as a relay substrate on which an electric ~~substrate~~circuit is mounted, and

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application Serial No. 10/702,082  
Attorney Docket No. Q77943

said electric circuit includes said controlled element, is connected to said upstream-side connector with a group of straight cables, and is connected to said down-stream side connector with another group of straight cables.

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application Serial No. 10/702,082  
Attorney Docket No. Q77943

### **REMARKS**

Upon entry of the present amendment, claims 1-3 and 8-10 are all the claims pending in the application. Claims 1-3 and 10 are amended, and claims 4-7 are cancelled without prejudice or disclaimer. No new matter is presented.

The outstanding objection and rejections are traversed, as discussed below.

#### **Claim Objections**

Applicant has amended claim 10 to address the informality noted by the Examiner. Reconsideration and withdrawal of the objection is therefore requested.

#### **Claim Rejections - 35 U.S.C. § 102**

Claims 1-6, 8 and 9 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Kishida et al. (U.S. Patent No. 5,357,268, hereinafter “Kishida”). Applicant respectfully traverses and submits that Kishida fails to teach or suggest all the features of claims 1-3 and 8-9, as evidenced by the following.

For instance, Applicant submits that Kishida fails to teach or suggest at least the feature of internal wiring in the first attachment unit between the second upper-contact point and the third lower-contact point is shifted so that a position of the first upper-contact point in the first upstream-side connector is identical to a position of the third upper-contact point in the second upstream-side connector, as recited by claim 1. By virtue of this feature, in each of the attachment units, the position of the contact point which is wired to the controlled element of its

own is identical. Thus, either one of the first attachment unit or the second attachment unit, as defined by claim 1, can be connected to the main section, and the first attachment unit and the second attachment unit can therefore be used interchangeably. Applicant notes that the above-mentioned features are described, for example, at least at page 12, line 12 to page 13, line 23 in the specification and shown in Fig. 2.

Kishida, by contrast, simply teaches an ink jet recorder circuit which has a power supply 121 for the head drive, a timing generation circuit 122, a recording data/drive timing generation circuit 123, a recording data division generation circuit 124, electric/thermal transducer 102 and recording head drive integrated circuits (IC's) 103, among other elements. *See* Kishida at col. 8, line 53 - col. 9, line 9 and Fig. 8. However, Kishida fails to suggest shifting of the internal wiring in the first attachment unit, as claimed. Indeed, the Examiner alleges that “recording head IC's 103 with corresponding transducers 102” correspond to “a plurality of attachment units” in rejecting the previously recited form of claim 1. However, Kishida does not teach internal wiring of a first attachment unit, as claimed, nor does Kishida suggest any modification of the wiring of the head drive circuit from that illustrated in Figure 8.

Thus, as evidenced by the foregoing, Kishida fails to teach or suggest at least the feature of internal wiring in the first attachment unit between the second upper-contact point and the third lower-contact point is shifted so that a position of the first upper-contact point in the first upstream-side connector is identical to a position of the third upper-contact point in the second upstream-side connector, as claimed. Accordingly, reconsideration and withdrawal of the rejection of claim 1 is requested.



AMENDMENT UNDER 37 C.F.R. § 1.111  
Application Serial No. 10/702,082  
Attorney Docket No. Q77943

Regarding claims 2-3 and 8-10, Applicant submits that these claims are allowable at least by virtue of their dependency and by virtue of the features recited therein.

With respect to claims 4-6, Applicant submits that the rejection of these claims is moot in view of the cancellation of claims 4-6 without prejudice or disclaimer.

### **Claim Rejections - 35 U.S.C. § 103**

Claim 7 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kishida in view of Fleming et al. (U.S. Patent No. 4,100,597), and claim 10 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kishida in view of Yamaguchi (U.S. Patent No. 4,366,489) in view of Reed et al. (U.S. Patent No. 4,720,798).

With respect to claim 7, Applicant submits that this ground of rejection is moot in view of the cancellation of claim 7 without prejudice or disclaimer.

With respect to claim 10, Applicant respectfully traverses and submits that claim 10 is allowable at least by virtue of its dependency from claim 1. Reconsideration and withdrawal of the rejection is requested.

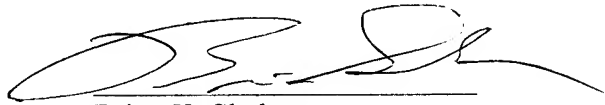
### **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application Serial No. 10/702,082  
Attorney Docket No. Q77943

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

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